

Financial Uncertainty, Worker Productivity and Savings Decisions: Experimental Evidence from India

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Abstract

Uncertainty about future finances is an inextricable part of the lives of the poor, but little is known about its consequence on decision making. This work provides evidence of its effects on the worker productivity and savings decisions of low-income individuals living in India using two randomized lab-in-the-field experiments. Conducted during a period of extreme pandemic-related uncertainty, the project assesses the impact of consumer-demand side uncertainty, income-supply side uncertainty and the combined effect of both through three distinct thought induction treatments. In Experiment 1, 253 participants create a cognitively-intensive output which is assessed for quality and quantity. The combined treatment displays a 31 and 14 percentage point reduction in quality and quantity of the output, respectively. Individual treatments do not yield significant results, suggesting that poverty-related psychological stressors are interactive. In Experiment 2, 273 participants take part in a game involving decisions regarding savings, borrowing and consumption. After thought induction, the combined treatment group saves the most and takes the most amount in loan, providing further evidence for the interactive effects hypothesis. However, the choice of debt avenue (moneylender or bank) remains unmoved across treatments. In both experiments, the self-perception of the scarcity mindset is recorded in the form of a simple rating. The null results for the combined treatment in Experiment 1 suggest that cognitive overload may impede metacognitive processes; the positively-directioned significant results in Experiment 2 for the consumer anxiety and combined treatment suggest that the mindset may be affected by more than situational factors.

Keywords: financial uncertainty, scarcity, worker productivity, savings decisions, behavioral development economics, economic impact of COVID-19 pandemic

JEL Codes: D91, O15, O16.

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1 Introduction

The poor face a myriad of psychological stresses that cause adverse behaviors in turn. Past research has found that poverty leads individuals to take myopic decisions such as overborrowing (Shah et al., 2012), have diminished value of consumption (Schofield and Venkataramani, 2021), entertain monetary considerations where none explicitly exist (Shah et al., 2018), decrease the magnitude of exchange asymmetries under financial stress (Fehr et al., 2019), as well as exhibit increased impulsivity and impaired cognitive performance (Johar et al., 2015; Gneezy and Imas, 2015) and be more present-biased (Cassidy, 2018). This work proposes a new dimension of psychological stress experienced by the impoverished – the uncertainty of finances in the immediate future, which may especially be ubiquitous in the unprecedented post-pandemic times when economic conditions continue to oscillate (The Tribune India, 2022). In two lab-in-the-field experiments conducted in the Mumbai metropolitan region following the recession of the first wave of the COVID-19 pandemic³, the impact of this mentally taxing financial uncertainty is investigated on low-income individuals' worker productivity as well as on their savings decisions, i.e. those outcomes with a direct link to the susceptibility of falling below the poverty line.

Assessment studies conducted across India at the height of the pandemic provide motivation for the direction of the inquiry. Bau et al. (2022) find in a large scale survey across six Indian states that on average, the household head's reported monthly income fell from $\mathbf{\overline{8}}$,625 to $\mathbf{\overline{3}}$,584, a reduction of about 50%. Further, 24% of their sample report reduced meals for at least one household member. In a related survey conducted in and around Delhi, Afridi et al. (2020) find that both men and women worry about their family's financial inadequacy, with 75% women and 61% men feeling anxiety about the situation, and about a third of both sexes reporting inadequate sleep. Adding to these findings, Cefalà et al. (2020) find in a survey with migrant workers in Tamil Nadu that 45% of male respondents and 27% of female respondents report being scared of uncertainty related to the pandemic. Together, the evidence strongly points to the fact that worries concerning financial security were on the forefront of low-income individuals' minds throughout the lockdown, lending credibility to the psycho-economic nature of the investigation.

Further, reports from and outside academic research suggest that the pandemic exacerbated India's food insecurity as a result of reduced access to agricultural produce owing to supply chain disruptions (Mishra and Rampal, 2020; Bhargava and Bhargava, 2021). Furthermore, mass layoffs in the course of two pandemic waves (Periodic Labour Force Survey, 2021, 2022), and the subsequent high rate of unemployment in the aftermath (CMIE Report, 2022) strongly suggest that income volatility has worsened over the past two years. The project builds on this two-sided nature of financial uncertainty by devising thought-induction treatments that engender worries related to each type - income supply and consumer demand. Income uncertain participants are induced to think about whether they think they will have a job three months down the line, among other things; consumption anxious participants are induced to think about whether they months down the line, among other things; whereas combined treatment participants

³Even though the pandemic had receded, the economy was still reeling from its effects (Nanda, 2021). In Mumbai, millions were unable to reach their workplace owing to the total shutdown of all modes of public transportation until January 2021 (Chaturvedi, 2021). While a small, elite fraction of the workforce could ease into the work-from-home model, a large chunk of the working population, such as factory workers, retail employees, office clerks, who were required to be physically present at their workplaces, were either put on half-pay or let go altogether. A Bloomberg magazine article dated Aug 21, 2020 provides anecdotal evidence of such workers living in Dharavi, the city's biggest slum and one of the locations for the project – most families lost at least one of their earning members and subsequently had to live on handouts by enterprising NGOs, or migrate back to their villages on foot (Altstedter and Pandya, 2020).

receive both thought induction treatments at once⁴.

Experiment 1⁵, a lab-in-the-field experiment with 253 participants, corresponds to the worker productivity outcome measure. First, the participants are trained to create a bracelet that engages all cognitive functions. After training, they are randomized into one of the treatments or into control, after which they are allotted 15 min to make as many bracelets as they can. All treatments display a reduction in the quality of the output, with the combined treatment displaying a startling 31 percentage point reduction (p < 0.05). The combined treatment is also 41 percentage point more likely to make errors (p < 0.05), and make 14 percentage point less bracelets (p < 0.05). In contrast, the individual treatments do not yield statistically significant results after the addition of controls. It is inferred from these results that the nature of the different kinds of financial uncertainty is interactive, as well as that the impaired productivity of the combined treatment group witnessed in the lab likely mimics the real-life cognitive processes of the impoverished, for whom psychological stressors are omnipresent.

Experiment 2, also a lab-in-the-field experiment with 273 participants, corresponds to the savings decisions outcome measure. Participants are presented with a multi-round game involving decisions regarding consumption, saving and borrowing, which they take using a fixed endowment provided in every round. Before commencing, they are randomly assigned to one of the thought induction treatments or into control. Right after the treatment, the consumer anxiety treatment as well as the combined treatment are found to save the most, albeit as informal savings (p < 0.1 and p < 0.05, respectively). In the loan-taking round, the consumer anxiety treatment takes the least amount of loan, and the income uncertainty treatment and the combined treatment mimic each other and contribute near-equal amounts to the loan from home savings (p < 0.1 for both). Debt choice remains unmoved by any of the treatments, with all groups displaying a near 50-50 split between the moneylender-akin and the bank-akin options, likely because of structural factors associated with debt-taking, such as collaterals. Importantly, the bank variable remains null across all categories and rounds, which provides the intuition that the urban poor view bank accounts as a fixed, investmentlike entity. Variables of the round after debt-taking are insignificant for all treatments, but upon dividing the sample based on debt choice, two distinct groups of finance decision-makers appear across all treatments: moneylender choice takers, who reduce bank savings to meet their daily needs in periods of hardship, and bank choice preferrers, who reduce consumption and informal savings to increase bank savings in hardship.

In both experiments, the participants are asked to provide a rating of their optimism for the future at the end of the thought induction/control questionnaire, both as a manipulation check and as a measure of their perception of their scarcity mindset, given that the thought induction treatments pertain to future uncertainties. In Experiment 1, all groups rate themselves lower than the control, but only the income uncertainty group's coefficient is statistically significant, even though the worst-performing treatment is the combined treatment. A possible explanation is that the additive nature of the two types of uncertainties causes a cognitive overload, leading to an impairment in the capacity for metacognition. In Experiment 2, all groups rate themselves to be *higher* than the control, with the consumer anxiety and combined treatment groups' coefficients being statistically significant. This leads to the interpretation that the scarcity mindset's deleterious effects may be tempered by individual factors such as education, which may help facilitate an awareness of the

⁴All questions can be found in appendix A.2.

⁵All safety guidelines, such as social distancing and mask wearing, were followed by everyone involved in both experiments.

suboptimal decision-making associated with it and take mitigative measures.

This work has the following contributions to make. In service to the psychology of poverty literature, this work is able to investigate the causes behind the scarcity mindset to a closer degree by segregating the thoughts according to the sources that they arise from - income volatility and consumer anxiety, and uncovering the additivity of their impact. Furthermore, it provides mixed evidence of the participants' own perception of their scarcity, which opens a chest of intriguing questions related to the impact of poverty-related psychological stressors on higher-order cognitive processes. Next, it contributes to the worker productivity literature by quantifying the impact of worries about the future on productivity, as well as by proposing the mechanism behind productivity loss - the deterioration of quality and quantity in that order - thus laying down a path for fruitful future research. Next, it provides perhaps the first evidence from the developing world on how innate preferences for formal vs informal savings and borrowing avenues can change as a reaction to uncertainty, as well as the different types of finance users who are receptive to such pressures, thereby contributing to the literature concerning the financial habits of the impoverished.

The paper proceeds as follows: Section 2 details the conceptual overview, which also contains an overview of the shared structure of both experiments. Section 3 presents the methods and results of the worker productivity experiment, and Section 4, that of the savings decisions one. Section 5 presents the results from the optimism rating analysis. Section 6 presents some ideas for further research and concludes.

2 Conceptual Framework

2.1 Past Literature

2.1.1 Cognitive strain and economic decision-making

While there has been a substantial literature dedicated to finding the effects of cognitive load on various outcome measures in a WEIRD (Western, Educated, Industrial, Rich and Democratic) laboratory setting (see Deck and Jahedi (2015) for an overview), the body of work examining the effects of poverty-induced cognitive strain on the decision-making and executive functions of the poor is still growing. The seminal Shah et al. (2012), Mullainathan and Shafir (2013) and Mani et al. (2013) laid down the groundwork for this agenda by investigating the relation between the cognitive function and and scarcity-related behaviors of the poor across various settings. Subsequent works have examined how the scarcity mindset affects the risk and intertemporal choice in low-income house-holds in the US (Carvalho et al., 2016), the reproductive health decision-making of men and women in Malawi (Norris et al., 2019), the increased likelihood that the poor have of noticing unexpected events than the rich (Schmitt and Schlatterer, 2021), the preference for opting into challenging scenarios (Banker et al., 2020), the diminished utility of engaging in consumption activities (Schofield and Venkataramani, 2021), and even the perception of race (Krosch and Amodio, 2014). Adding to the literature, Ong et al. (2019) find that an unanticipated debt relief program for low-income individuals in Singapore led to better cognitive functioning, less anxiety and less present-bias.

Two works from this body of literature are of importance to this project. The first one is Lichand and Mani (2020), which first segregates the causes of poverty into *low income levels* and *high income uncertainty*, and then finds that it is income uncertainty that systematically has adverse

cognitive effects; low income levels affect the cognition of only those from the poorest households. The idea for treatment 1 is derived from this paper, and refined further to represent only income supply-side uncertainty; the consumer demand-side uncertainty is termed 'consumer anxiety', and is augmented into a full treatment in itself. The second one is Rad et al. (2020), which highlights the role of religious festivals in the decision-making of individuals. The authors find that during Ramadan, people of Muslim faith hold staunch fasts between sunrise and sunset, thus leading them to view food as a scarce resource, the reminders of which impair their reaction time and accuracy on a cognitive control test. This insight is used to time the collection of data for this project right before Diwali, i.e. the most important Hindu festival that households spend a lump sum amount of money on (Banerjee and Duflo, 2007). While Hindus don't observe fasts in anticipation of Diwali in the same manner that Muslims do before Ramadan, their financial lives are likely to grow more conservative to accommodate the upcoming expenditure, which is the source of their scarcity.

2.1.2 Worker Productivity

The investigation into the mechanisms behind productivity is a relatively new line of research. The earliest paper, Kaur et al. (2015), examines the effect of offering productivity-enhancing commitment devices to data-entry workers and finds small effects. Similarly, Freeman et al. (2019) find using administrative data from China that a nonlinear incentive system for insurance agents led to a significant increase in productivity. A similar effect also is found by Brune et al. (2020) in their randomization of incentives on a tea estate in Malawi. A host of studies that have examined the effect of altering physiological factors like sleep (Bessone et al., 2021), alcohol consumption (Schilbach, 2019), nutrition (Schofield, 2014), and environmental factors like noise (Dean, 2021), air pollution (Chang et al., 2016, 2019), heat (Adhvaryu et al., 2018), have found mixed evidence.

Two papers from this literature are of importance to the current project. First is the aforementioned Dean (2021), from which the overarching structure of Experiment 1 is derived. The training-then-final-task experiment flow is molded to fit the lab-in-the-field constraints, and the idea to analyze data on both qualitative and quantitative metrics is derived from the paper as well. Second is Kaur et al. (2022), which investigates the effect of ameliorating financial strain by providing cash transfers to poor manufacturing workers in India. The authors find that on cash-flush days, average productivity increases by 7%, especially in relatively poorer workers. Experiment 1 is a kindred spirit of Kaur et al. (2022). It investigates the deleterious effects of the uncertainty of tomorrow's finances on productivity (i.e. the high financial uncertainty cause of poverty), whereas the authors of Kaur et al. (2022) aim to mitigate the effects of today's cash-crunch on productivity by providing the cash transfers to the workers, thus testing the today's low levels of income cause of poverty, both of which are proposed in Lichand and Mani (2020).

Additionally, a distinction is made between the interpretation of what productivity means in the aforementioned studies and in Experiment 1 of this paper. The former investigate the productivity of pre-trained workers in a field setting, whereas the lab-in-the-field experiment investigates the *ability to be productive* in a lab setting with a task that is restricted to working only with the aid of executive functions (and not with tool use, which is an extension of cognition, called distributed cognition). This makes the outcome measure oriented primarily towards behavioral science.

2.1.3 Savings and Borrowing Habits

Development economists have long been interested in understanding the savings habits of the poor and designing interventions to enhance the outcomes. In particular, studies concerning the financial habits of the urban poor in India have found a trail of preference for informal banking methods. A report from the Reserve Bank of India finds that even with a relatively higher degree of access to formal financial resources, the urban poor are systematically excluded from financial inclusion efforts, causing them to resort to informal banking practices to meet their personal and health-related needs (RBI Monthly Bulletin, 2013). Another study assessing the financial literacy among the working youth in urban India, the target group of experiment 2, finds that a small fraction of the sample displays high levels of financial literacy, which is highly correlated with socio-economic indicators such as family income (Agarwalla et al., 2013). Specific to the working population of Mumbai, Bharucha (2017) finds a strong effect of educational and employment status on financial literacy, which are the key criteria for screening in experiment 2. Taken together, the evidence suggests that first-generation users of formal banking practices walk on a tightrope between formal and informal finance, lending credibility to the direction of the investigation of experiment 2.

The literature has only somewhat investigated the avenues of informal savings among the poor, with most of it concentrated on making RoSCAs (rotating savings and credit associations) more efficient (see Bisrat et al. (2012), Donoso et al. (2011), Beaman et al. (2014), etc). Nandhi (2012) enumerates the kinds of informal savings that the poor in India usually resort to - keeping cash at home, under the mattress, in a gullak (Indian version of a piggy bank), or on one's person. Moulick et al. (2008) confirm these types in their survey with the poor in Northeast India. They also find that the preference for such types of savings comes either from a lack of feasible alternatives, or, more relevantly, because of a lack of trust in the banking system.

Adding perspective to the inclusion of informal finance in the current study, there is evidence that households in urban India make use of both institutional and non-institutional credit agencies. Srinivas (2016) attributes the preference for the latter to frictions in the formal credit market, namely, the institutional agencies not finding the urban poor 'bankable'. The All India Debt and Investment Survey (2013) estimates that 4.9% of all households in the urban parts are indebted to non-institutional credit agencies, and 3% are indebted to both institutional and non-institutional credit agencies. Outstanding cash debt from institutional agencies was 87% from institutional credit agencies, as opposed to 13% from non-institutional credit agencies. Relatedly, Bhattacharjee et al. (2010) find that the interest rates availed by houses with the lowest monthly per capita expenditures (the economic class sampled in this paper) are approximately 12-24% per annum when the loan is taken from professional moneylenders. This provides credence to the moneylender-representative interest rate option in experiment 2 (which totals to 18% per annum).

Lastly, an investigation into the nature of financial shocks faced by the poor reveals that the poor access informal credit when facing idiosyncratic shocks that are largely health-related (Pradhan and Mukherjee, 2018; d'Errico et al., 2021). These findings provide a basis for including a health-shock equivalent amount as the unforeseen expenditure in experiment 2.

To my knowledge, the work investigating the *mechanisms of the preferences* towards informal vs formal savings and credit avenues is limited. Two papers are relevant. Somville and Vandewalle (2018) perturb the way the poor receive transfers, via bank or in cash. The resulting change in behavior can be thought of as a response to a change in finance apparatus, which is not precisely a

change of innate preference. In addition, Bos et al. (2022), find using random assignment of welfare payments in Sweden that there is a difference in preference for pawn and mainstream credit market, which they attribute to the level of education of the borrowers, and not to the feelings of financial uncertainty. Experiment 2's lab-in-the-field set up, coupled with the aid of electronic tablets which host sophisticated software containing multiple rounds of financial decisions, allows for the understanding of the impact of this specific mental taxation on financial preferences in detail. Once again, the project is oriented towards behavioral science findings.

2.2 Project Design

On the whole, the project is designed to bring out the individual and combined effects of consumerdemand side uncertainty and income-supply side uncertainty on two outcome measures, worker productivity and savings decisions. The treatment as well as the control questionnaires are common to both studies; with the exception of language (the productivity task sessions were conducted in Marathi and the savings decisions, in Hindi), no element of any of the questionnaires was changed. The questions for all treatments can be found in Appendix $A.2^6$.

Figure 1 lays down the design common to the two experiments. The dotted lines around the analogous demo stage for the productivity experiment and the instructions stage for the savings game are to denote the placement of that stage in the concerned experiment. In the productivity task, the demo was before the depression inventory, after which they proceeded to priming, but in the savings game, instructions were after the depression inventory, after which they went on to the priming. These changes were made keeping in mind the complexity of the savings game, and the need to have the instructions closer to the final task. Specifics of each stage are elaborated upon in the experiment design subsection of each study.

3 Experiment 1 - Worker Productivity

3.1 Methods

The first experiment was conducted in a large low-income settlement in the Mumbai metropolitan region. The participants were low-income individuals, many of whom owned small-scale businesses, such as pickle-making, candle-making, garland-making, etc. Such individuals were likely to lose a part of their income and become susceptible to falling under the poverty line if their productivity declined due to the stress of financial uncertainty. To recruit them for the study, a local volunteer took the experimenter around the alleyways in which they lived.

The outcome measure was a manually intensive task that engaged all executive functions (attention, working memory, cognitive flexibility, inhibitory control and higher-order reasoning). Fig 2 below contains an example of the bracelet affixed on a working board. The bracelet was made by fixing three nylon strands onto the two clips, and repeatedly knotting them in a six-step procedure until

 $^{^{6}}$ Note: (1) Four questions in the consumer anxiety treatment, i.e. those concerning urgent needs for different amounts of money. are directly borrowed from Banker et al. (2020). (2) The control questions, which are centered around picking favorite movies, actors and actresses, are likely not to induce anything, given that Mumbai is the hometown of the Hindi film industry, and messaging related to Bollywood is pervasive throughout the city via billboards, songs on the radio, etc.



Figure 1: Overarching structure of the project.

the 20 cm mark on the board was met, after which a completion knot was made and the participant could move on to making another bracelet. Appendix B provides an overview of the steps of the task.

The hypothesis was that intrusive thoughts about one's financial uncertainty would lead to decrease in performance⁷. For example, remembering the six-step procedure engages the working memory and cognitive flexibility, adjusting the dimensions while knotting engages attention and cognitive flexibility. In line with the investigation only into the ability to be productive, no tools were used in the procedure.

3.1.1 Experiment Design

A total of 253 participants (90.15% female, mean age = 31.29) participated in the study. The inclusion criteria was (i) being at least 18 years of age and (ii) being able to read from a sheet of paper. 46 sessions were conducted in total, with 3-10 participants in each session. Treatment 1 (income uncertainty), Treatment 2 (consumer anxiety), Treatment 3 (combined treatment) had 71, 59 and 62 participants respectively, whereas the control group had 61 participants. The randomization into groups was done on a session level, and the order of sessions was shuffled every day. Each participant attended only one session. The groups of participants were created based on which alleyway they lived in, and each group was given a specific time slot to come to the session room. 45 total sessions with 3-10 participants in each were conducted. Each session lasted about 40-60 mins.

The experiment was conducted in four stages. In the first stage, the participants were provided

 $^{^{7}}$ For further information about the role of poverty in dysregulation of cognitive functions, refer to Dean et al. (2017).



Figure 2: Image of the working board in the productivity task.

with a demonstration of the task and some time to practise it. They were informed that they would receive compensation per piece if they could exactly reproduce the bracelet made in the demonstration. To ensure comprehension, each participant was given a one-on-one after the demonstration. This stage took about 20 mins.

In the second stage, the participants received a questionnaire printed on paper containing two types of questions. First, they answered ten selected questions from the Beck Depression Inventory, which served to provide a balance check for each group's baseline state of mind.⁸ All groups answered this section. Second, they answered questions that served to prime them according to the treatment assigned for that session. Participants were instructed to answer every question without paying heed to how long it would take. Further, they were asked to raise their hands as soon as they finished answering to indicate the completion of this stage and to start the clock for the next stage. This stage took about 15 mins.

In the third stage, the participants performed the bracelet-making task. Each of them were given 15 mins to make as many bracelets as they could, with the time starting as soon as they raised their hand. The incentivization was done per piece - for every bracelet they made that was approximately perfect, they would receive $\gtrless10$ on top of the payout for participation.

 $^{^{8}}$ A recent wave of literature in behavioral development economics has uncovered the deleterious impact of depression and anxiety on the decision-making abilities of the impoverished. For an overview, refer to Ridley et al. (2020).

As soon as the task was over, the participants proceeded to the fourth and final stage, in which they answered the SES questionnaire, also on paper, while their work was processed for payment.

The payout for participation was $\mathbf{E}100$ (approximately \$1.30; enough to buy a day's vegetables for a family of four), and with the incentive from the bracelet making task, they earned about $\mathbf{E}110 - \mathbf{E}150$ (approximately equal to \$1.4-\$1.96) each.

3.1.2 Grading

The bracelets, which were given only the participant code (containing no indication of the treatment received), were graded at the end of each day by a third-party enumerator on a pre-decided set of six criteria. Thus, each bracelet could receive at most six points. The table enumerating the criteria is in Appendix C. The enumerator also made a record of the number of knots made in each bracelet, and number of bracelets made by each participant.

3.2 Results

Four measures are considered for data analysis. Firstly, the points earned across bracelets by each individual are totalled, and this is called the binary rating. Secondly, the number of errors across bracelets is averaged per bracelet made by the participant. Together, these measures can be called qualitative measures. The other two measures, the total number of knots across bracelets and the total number of bracelets, can be called the quantitative ones.

The demographic balance check and corresponding F-tests can be found in Appendix D. An imbalance is found in the age and occupation variables across treatments; they are controlled for in the point estimates. The rest are found to be balanced.

3.2.1 Individual level estimation

Table 1 displays the results for the individual level estimation. Both the qualitative measures (binary rating and average number of errors) start from zero and are skewed rightwards. Thus, following Burbidge et al. (1988), the inverse hyperbolic sine transformation is applied to them to improve interpretability of the outcomes. The quantitative measures (number of knots and number of bracelets) are log-transformed. As a check for robustness, Poisson and OLS regressions are estimated on the untransformed data, leading to similar results. They can be found in Appendix E.

Columns 1 and 2 in Table 1 show the regression results for the qualitative rating. In the raw estimation, a reduction in the binary rating is seen for all three treatments , but significance for the income uncertainty and consumer anxiety treatment vanishes when demographic controls are added. The worst performing treatment is the combined treatment with a 31 percentage point reduction in the binary rating.

The average number of errors (columns 3 and 4 in Table 1) are not statistically different across groups, with only the significance appearing in the combined treatment with the application of demographic controls. This treatment is 41 percentage point more likely to commit errors, even though

	Binary rating		Avg no. of errors		No. of knots		No. of bracelets		
	(inverse h	yperbolic si	ne transformation)		(logarithm	ic transfo	rmation)	mation)	
Income Uncertainty	-0.269**	-0.173	0.437	0.427	-0.172*	-0.077	-0.020	0.064	
	(0.125)	(0.123)	(0.374)	(0.301)	(0.099)	(0.100)	(0.073)	(0.070)	
Consumer Anxiety	-0.230**	-0.133	-0.231	-0.172	-0.171**	-0.066	-0.099	0.008	
	(0.109)	(0.123)	(0.164)	(0.177)	(0.076)	(0.087)	(0.068)	(0.072)	
Combined Treatment	-0.338***	-0.310**	0.424*	0.409**	-0.291***	-0.225^{*}	-0.155**	-0.127**	
	(0.102)	(0.125)	(0.238)	(0.199)	(0.094)	(0.119)	(0.063)	(0.061)	
Demographic controls?	No	Yes	No	Yes	No	Yes	No	Yes	
Control mean	3.039	2.649	1.380	1.897	3.773	2.831	0.868	0.671	
Observations	253	253	253	253	253	253	253	253	
R-squared	0.041	0.092	0.049	0.133	0.035	0.127	0.031	0.126	

Table 1: Individual level estimation

Table 1: This table presents the individual-level estimation of eight regressions assessing the average treatment effects on the two qualitative measures, binary rating and average number of errors, and two quantitative measures, total number of knots and total number of bracelets, relative to the control. Specifications both without and with controls for demographics (age, education, occupation, language) and depression index are presented. Standard errors clustered at the session level. *p < 0.10, **p < 0.05, ***p < 0.01.

the procedure is conceptual and repetitive.

The total number of knots across all bracelets by each participant (columns 5 and 6 in Table 1) is reduced significantly only for the combined treatment. There is no corresponding significant result in these columns for the income uncertainty treatment. The same is true for the total number of bracelets, with only the combined treatment exhibiting a 14 percentage point reduction in the number of bracelets made. Together, all results can be interpreted as evidence that psychological strain progressively takes away first the quality and then the quantity of productivity.

The null results for the consumer anxiety treatment across the board allude to the possibility that such thoughts are prevalent in the participants' daily lives, and any more salience of them has no effect on their functioning. A plausible explanation is that the living costs of the city are high and ubiquitous, leading to the near-constant reminder of this dimension of financial anxiety.

The results are also comparable to those of Kaur et al. (2022). The authors find a 0.08 SD improvement in the quality of productivity when cash transfers are infused. In the current estimation, a homogenous 0.12 SD reduction in quality is seen across all treatments. Further, they find a 6.9% increase in total productivity after cash incentives, which is similar to the 12.7% decrease in the number of bracelets created by the combined treatment, i.e. the treatment mimicking rhe uncertainty encountered in field studies.

4 Experiment 2 - Savings Decisions

4.1 Methods

The second experiment was conducted across five locations in the Mumbai metropolitan region⁹ to examine if city-dwelling low-income individuals, who walk the line between formal and informal finance, revert to the latter in times of financial uncertainty, thus increasing their susceptibility of being pulled back into poverty. The lab-in-the-field experiment was set up in a community hall at the center of each locality, and word of the study was spread through volunteers who were an integral part of each community. Each session would start as long as a minimum of five participants had walked in; on occasion a session started with two participants as well. The study was conducted in 44 sessions, with the approximate duration of each session being 50-60 mins.

4.1.1 Experiment Design

A total of 273 participants (57.5% female, mean age = 26.60) participated in the experiment. The inclusion criteria was (1) being able to use an electronic tablet (2) having worked for at least six months at some point, even if not currently working, to ensure a grasp of what it means to save and to borrow.

The experiment was coded in oTree in Hindi. It was sent remotely from a laptop to the electronic tablets that the participants used to record their answers. Some screenshots have been included in Appendix F. The allocation into the treatment groups was done on a session level in order to simplify the design, and the order of randomization was shuffled every day. The income uncertainty group, the consumer anxiety group and the combined treatment group had 86, 65, and 67 participants, respectively, and the control group had 55 participants.

The experiment proceeded in five stages. In the first stage, the participants answered ten selected questions from the Beck Depression Inventory, which served as a means of understanding their baseline levels of mental health. In the second stage, the participants were provided with the instructions to the game, along with a short quiz to ensure that they understood them. In the third stage, they answered questions about their financial status (or not), which served as the prime (or not). In the fourth stage, the participants proceeded to the 16-round savings game, explained in detail in the next paragraphs. After completing the game, they proceeded to the fifth and final stage, in which they answered SES questions.

The 16-round savings decisions game was derived from Amar et al. (2011). Each round represented a month – this was made clear in the verbal instructions. In each round, the participants received an endowment of ₹10,000, which was approximately equal to their monthly salary.

In the first four rounds, they allocated their endowment to three buckets - consumption, savings at home and savings in the bank. The minimum consumption amount was set to $₹3,000^{-10}$ – if the participant entered any lesser amount, she would receive an error message. Participants were not made aware of this threshold in the instructions before they commenced to keep their financial

⁹It was found early on that the only a small fraction of all people living in a settlement were comfortable with operating an electronic tablet, necessitating the set up of the experiment across multiple locations. ¹⁰This amount usually covers monthly utility bills and groceries. In qualitative talks before the conception of the

¹⁰This amount usually covers monthly utility bills and groceries. In qualitative talks before the conception of the study, no participant reported paying rent, perhaps because they lived in informal settlements.

decision-making free of any influences except for the thought induction treatments. However, implicitly adding the threshold was important to ensure that they allocated their endowment to the buckets realistically, and did not save more than what they would in real life, which would then impact their payoff (elaborated further below). No other variables (saving in the bank, saving at home...) had a minimum criteria, which ensured freedom of choice over them.

After the fourth round, they were presented with an unforeseen expenditure of ₹54,000 (comparable to the expense of a medical emergency), which they could pay for by using money saved both at home and in the bank, as well as by taking some amount of loan. The loan could be taken using one of two options - 1.5% per month for 10 months (rounds), or 8% per year for 12 months (rounds). Notice that the former option translates to 18% *per year*, which is considerably higher than the latter option, and thus the poorer financial choice. Importantly, it mirrors the one provided by private moneylenders, and the latter one is representative of the rate offered by banks.

After choosing the loan option and the loan amount, the participants proceeded to pay the monthly installment (calculated by the software) every round until it was paid off, i.e. either over 10 rounds or 12 rounds, depending on their choice. They also decided the allocation of the remaining endowment to consumption, savings at home and savings in the bank, as in rounds 1-4. While it was possible to terminate the game after round 5, there was an interest in understanding if they performed any alternative strategies for personal finance management.¹¹

On top of the ₹100 participation fee for each participant, the final payout involved a lottery clause – at the end of the study, five people were randomly chosen to receive their total savings at the end of the game. No interest was provided on the bank savings. Recall that a minimum consumption amount was enforced to encourage participants to behave realistically, and not in a dishonest way that could provide them with maximum payoff. It can thus be said with a degree of certainty that whatever the participants saved in each of the avenues in the game mirrored their real-life savings habits.

4.2 Results

The balance check and corresponding F-tests can be found in Appendix D. No demographic variable is found to be different across groups.

The regression results can be found in Tables $2 - 4^{12}$. Table 2 presents regressions for round 1, loan screen and round 5 variables. In Panel A, the round 1 consumption variable (columns 1-2) is found to be similar across all groups, which can be interpreted in two ways. First, all participants belong to the same low-income class, making their set of consumption preferences homogenous and frugal, and immovable in times of hardship. Second, past research posits that the scarcity mindset accrues a 'focus dividend' (Mullainathan and Shafir, 2013), in which items that have received the most attention in a person's mind (eg, bills pertaining to consumption goods) can be recalled with accuracy.

¹¹This was not found to be the case.

 $^{^{12}}$ Note: Armed with the knowledge that clustering standard errors is a design-related decision (Abadie et al., 2022), those in this experiment are not clustered, given the fact that the groups were not created by the experimenter (as they were in experiment 1), as the session room enforced a walk-in policy. An additional measure to confirm the appropriateness of this decision is the examination of the intracluster correlations (ICCs), that range between 0.04-0.07 for each variable. For contrast, the ICCs in experiment 1 range from 0.10-0.31 in Experiment 1 for the untransformed variables.

Table 2: Round-wise results

	Consumption		Savings in bank		Savings at home	
Income Uncertainty	-61.7548	-106.7099	-79.4080	-51.6162	141.1628	158.3261
	(292.2007)	(283.8821)	(230.6357)	(230.2851)	(217.5873)	(215.4639)
Consumer Anxiety	-436.0839	-377.3300	42.2378	33.0389	393.8462*	344.2911
	(310.0665)	(295.6552)	(244.7373)	(239.8353)	(230.8911)	(224.3995)
Combined Treatment	-343.8290	-245.8905	-155.6187	-181.2036	499.4478**	427.0941*
	(307.9381)	(296.4726)	(243.0573)	(240.4984)	(229.3062)	(225.0199)
Control mean	4974.5455	1508.5777	2765.4545	4588.9217	2260.000	3902.5005
Demographic controls?	No	Yes	No	Yes	No	Yes
Observations	273	273	273	273	273	273
R-squared	0.0113	0.1417	0.0031	0.0859	0.0227	0.1186
	1	1		1	1	1

Panel A: Round I variable

Panel B: Loan screen variables

	Loan a	mount	From	ı bank	From	home
Income Uncertainty	-1564.6406	-1675.8688	179.7569	262.3937	1384.8837*	1413.4751*
	(1268.1022)	(1251.8723)	(847.1576)	(856.1657)	(805.6766)	(802.1539)
Consumer Anxiety	-2396.2238*	-1999.3445	1046.9930	885.6968	1349.2308	1113.6477
	(1345.6369)	(1303.7893)	(898.9547)	(891.6722)	(854.9375)	(835.4204)
Combined Treatment	-1995.1560	-1381.5963	159.3351	-100.1370	1835.8209**	1481.7334*
	(1336.4000)	(1307.3939)	(892.7839)	(894.1374)	(849.0689)	(837.7301)
Control mean	40485.4545	28029.8754	7614.5455	13215.6503	5900.0000	12754.4743
Demographic controls?	No	Yes	No	Yes	No	Yes
Observations	273	273	273	273	273	273
R-squared	0.0131	0.1153	0.0066	0.0668	0.0185	0.1051

Panel C: Round 5 variables

	Consumption		Savings in bank		Savings at home	
Income Uncertainty	7.1448	16.0559	16.8607	56.1423	92.8837	35.5719
	(129.5475)	(130.7568)	(153.0981)	(155.3069)	(134.1460)	(131.6473)
Consumer Anxiety	63.3650	74.5231	-54.2014	-74.2461	131.6923	107.7454
	(137.4683)	(136.1794)	(162.4589)	(161.7477)	(142.3480)	(137.1069)
Combined Treatment	-17.8467	2.7864	152.3805	130.0150	-59.5075	-109.1274
	(136.5247)	(136.5559)	(161.3437)	(162.1949)	(141.3709)	(137.4859)
Control mean	3434.7273	3214.7619	1274.7091	1952.3960	1244.0000	1785.9206
Demographic controls?	No	Yes	No	Yes	No	Yes
Observations	273	273	273	273	273	273
R-squared	0.0016	0.0644	0.0072	0.0603	0.0093	0.1224

Table 2: This table presents the regression results for variables from three screens in the savings game. Panel A presents round 1 variables, Panel B presents loan screen variables, and Panel C presents round 5 variables. Specifications both with and without controls for demographics (age, occupation, gender, education) and depression index are presented. *p < 0.10, **p < 0.05, ***p < 0.01.

Panel A, columns 3-4 present regression results for the 'savings in bank' variable, which also remains statistically significant across groups. Upon further inspection, it is seen that the amount saved is comparable to that saved at home. The lack of variance across treatments is likely to be indicative of the urban poor (i.e. first generation formal finance users) perceiving bank accounts as immutable, investment-like entities.

Panel A, columns 5-6 present regression results for the 'saving at home' variable, which displays some action. Without adding controls, both the consumer anxiety treatment and combined treatment save more at home. However, upon the addition of controls, only the combined treatment is found to have significant results. Some interpretations ensue. First, it is possible that this type of savings is the most familiar to the urban poor, which is why they would react the most to economic uncertainty by changing this behavior for this variable. Further, it can be seen that the income uncertainty treatment (null across the board; elaborated on further below) in fact displaces its savings from the bank to home, as witnessed by the alternate signs on the betas for both types of savings, adding strength to the aforementioned argument. Second, the significant results for the combined treatment variable add credibility to the finding from experiment 1 – that uncertainty-related psychological stress about uncertainty is likely interactive in nature – more the number of stressors, more the stress induced.

The null results for the income uncertainty treatment across all columns are indicative that this particular socio-economic class feels that stressor so frequently that any salience has no effect on decision-making. This interpretation goes in line with the null results of the 'poverty identity' treatment from Banker et al (2020), in which it is found that low-income individuals who are primed to think about identity of being poor (induced by verbally asking questions about all the times they felt insecure about their financial status) do not exhibit a different preference for challenging scenarios relative to those in the control.

Table 2, Panel B displays the regression results of loan screen variables. Columns 1-2 find that the difference in the amount of loan taken is not statistically significant across treatments after the addition of controls, but all treatments have negative betas. This is indicative that uncertainty about the future makes one conservative in terms of loan-taking to some degree. It is still seen that the beta of the consumer anxiety treatment is nearly 1.5 times that of the combined treatment, pointing towards the hypothesis that thoughts of purely income uncertainty may temper myopic overborrowing.

The null results for the 'contribution from bank' variable in columns 3-4 indicate once again that this socioeconomic class views banks to be an investment entity. The results also likely elucidate that the hesitation with banking is rooted in operations, not saving habits per se. Columns 5-6 present results for the 'contribution from home' variable. The considerable action on this variable across all variables provides a deeper understanding of the preferences of the urban poor for informal banking methods. It is seen that the betas and standard errors for the income uncertainty treatment and the combined treatment are nearly the same after the addition of controls. This provides an insight on which strain of uncertainty dominates the decision-making process for the combined treatment for this particular variable. The findings can be interpreted as such – one's willingness to contribute to large loans is reduced when one feels more anxious about being able to afford necessities, but uncertainty about future income overrides this reduction.

Further insights are provided by the examination of the percentages of contributions from each

Panel A: Loan screen: Contribution percentages from savings					
	From bank savings	From home savings			
Income Uncertainty	70.39%	73.66%			
Consumer Anxiety	74.10%	68.38%			
Combined Treatment	73.08%	70.00%			
Control	66.37%	67.83%			

 Table 3: Loan screen variables

Panel B: Debt choice across treatments: Logistic regressions					
Income Uncertainty	0.0000	-0.3051			
	(0.2157)	(0.6564)			
Consumer Anxiety	-0.2787	-0.4529			
	(0.2505)	(0.6290)			
Combined Treatment	0.0896	-0.1312			
	(0.2446)	(0.6228)			
Demographic controls?	No	Yes			
Control mean	-0.0364	-0.2084			
Observations	273	273			

Panel C: Debt choice expressed as percentages					
	Moneylender choice	Bank choice			
Income Uncertainty	50.91%	49.09%			
Consumer Anxiety	50.00%	50.00%			
Combined Treatment	56.92%	43.08%			
Control	47.76%	52.24%			

Table 3: Panel A presents the percentage breakdown of contribution to the unforeseen expenditure from each of the savings avenue (bank and home), Panel B presents regression results assessing average treatment effects on debt choice. Specifications with and without controls for demographics (age, occupation, gender, education) and depression index are presented. Panel C presents debt choice broken down as percentages, sorted on group.

of the savings variables, found in Table 3, Panel A. It is seen that relative to the control, the income uncertainty treatment and combined treatment contribute more from home, whereas the consumer anxiety treatment mimics the control. This finding reinforces the interpretation of income uncertainty taking the helm of decision-making for loan-related financial decisions. The higher contributions from the bank across all treatments relative to the control provide can be interpreted as the consequence of financial uncertainty motivating low risk-aversion behaviors.

Table 2, Panel C presents the regression results of round 5 variables, i.e. decisions made after the take-up of the loan. All variables are found to be statistically insignificant across all groups. This may likely be because a large portion of the monthly endowment is spent on installments, and the remaining fungible income is economically distributed in the three buckets. However, in a reversal, the control group saves more in banks than at home. The income uncertainty treatment and combined treatment once again behave similarly by contributing more to the bank than at home (with the latter displaying a negative coefficient on the home savings variable). The consumer anxiety treatment displays opposite preferences. This likely indicates that the risk aversion stemming from income uncertainty is greater, leading to a higher contribution to the investment entity.

The logistic regression results of the loan-screen debt choice are presented in Table 3, Panel B. None of the treatments have an effect on debt-choice. Observing the percentage breakdown across treatments in Table 3, Panel C informs that the income uncertainty and consumer anxiety groups behave similarly, with an equal split between the moneylender choice and the bank choice. However, we see that the combined treatment slightly prefers the moneylender choice, which may be an idiosyncrasy of that sample, or may be an effect of myopic scarcity-induced decisions, providing evidence to the conversation surrounding scarcity and overborrowing (Shah et al., 2012; Karlan et al., 2019). The breakdowns for all treatments are distinct in comparison to the control, which slightly prefers the bank choice (i.e. the optimal choice), likely because of more available bandwidth to process the implications of debt choice.

In light of the insights from the debt choice analysis, round 5 variables are revisited by bifurcating the observations based on debt choice and performing regressions to uncover differences in decisionmaking. Table 4, Panels A and B present results of the moneylender choice sample and debt choice sample, respectively. The moneylender choice sample's consumption variable across all treatments has a positive sign on the betas (with the consumer anxiety treatment being statistically significant), but negative betas are encountered across all treatments for the bank choice sample. Further, the moneylender choice sample has negative betas for the consumer anxiety treatment and combined treatment for bank savings, but all betas are positive for the same in the bank choice sample, with the combined treatment being highly statistically significant¹³. For the home savings variable, the signs alternate for the first two treatments between the two samples, but the combined treatment has a negative sign in both samples. These contrasts in decision-making between the two samples are likely to be indicators of the preferences of two different kinds of users in the financial system informal loan-takers, who prefer to reduce bank savings and keep consumption and informal savings at status quo, and formal finance users, who prefer to reduce consumption and informal savings, but increase bank savings after hardships.

¹³The individuals who took the bank loan also saved the most in the bank post loan-taking.

Table 4: Split sample results

	Consumption		Savings in bank		Savings at home	
Income Uncertainty	26.2359	21.1288	-93.8488	38.1515	171.1877	117.4729
	(156.7519)	(155.0439)	(216.6174)	(218.6275)	(187.8484)	(184.5739)
Consumer Anxiety	338.6564**	283.3656*	-361.8784	-312.5820	78.0985	54.0424
	(161.6865)	(158.1906)	(223.4366)	(223.0646)	(193.7619)	(188.3199)
Combined Treatment	119.6429	150.9039	-211.2500	-233.0963	-221.6161	-274.2119
	(167.0393)	(162.8195)	(230.8337)	(229.5919)	(200.1765)	(193.8305)
Control mean	3192.8571	5472.8873	1523.5000	933.5783	1288.9286	1491.3704
R-squared	0.0430	0.1858	0.0224	0.1339	0.0354	0.1901
Observations	140	140	140	140	140	140

Panel A: Moneylender choice sample results

Panel B: Bank choice sample results

	Consumption		Savings in bank		Savings at home	
Income Uncertainty	-20.9044	-7.5714	136.7847	175.7267	16.2438	-82.3160
	(200.9630)	(209.6635)	(212.9447)	(231.0059)	(191.8348)	(196.4265)
Consumer Anxiety	-231.6270	-170.5005	281.6177	276.4216	189.7354	59.2701
	(220.7515)	(223.9924)	(233.9130)	(246.7935)	(210.7245)	(209.8508)
Combined Treatment	-173.2413	-117.0067	515.3820**	543.1422**	94.2212	-48.7675
	(209.6347)	(219.2060)	(222.1334)	(241.5198)	(200.1126)	(205.3665)
Control mean	3685.5556	2492.1333	1016.7037	1782.0212	1197.4074	1818.4965
R-squared	0.0430	0.1858	0.0224	0.1339	0.0354	0.1901
Observations	133	133	133	133	133	133

Table 4: This table presents the regression results assessing the average treatment effects on round 5 variables, sorted on choice of debt. Panel A presents results for the sample that chose the moneylender option, and Panel B, the same for the bank option. Specifications with and without controls for demographics (age, occupation, gender, education) and depression index are presented.*p < 0.10, **p < 0.05, ***p < 0.01.

5 Optimism rating analysis

In both studies, all participants were asked to rate from 0 to 3^{14} how optimistic they felt about the future at the very end of the treatment/control questionnaire, to understand whether the treatment participants, who were induced to think about their future financial uncertainty, had an worsened outlook compared to the control. The findings are also interpreted as a measure of the degree of their scarcity mindset in the moment.

Panel A: Experiment 1				
		Optimism Rating		
Income Uncertainty	-0.4018***	-0.2793*		
	(0.1367)	(0.1576)		
Consumer Anxiety	-0.3266**	-0.2487		
	(0.1421)	(0.1596)		
Combined Treatment	-0.0846	-0.0332		
	(0.1421)	(0.1535)		
	(0.0963)	(0.4704)		
Demographic controls?	No	Yes		
Control mean	2.0685	1.7507		
Observations	253	253		
R-squared	0.0410	0.0918		

Table 5: Optimism rating analysis

Panel B: Experiment 2

		Optimism Rating		
Income Uncertainty	-0.1364	0.0376		
	(0.1360)	(0.1316)		
Consumer Anxiety	0.8601***	0.8769***		
	(0.1508)	(0.1398)		
Combined Treatment	0.6909***	0.7171^{***}		
	(0.1498)	(0.1402)		
Demographic controls?	No	Yes		
Control mean	2.3091	2.8500		
Observations	273	273		
R-squared	0.2215	0.3614		

Table 5: This table presents results assessing the average treatment effects on the optimism rating in both experiments. Panel A presents the results corresponding to Experiment 1, and Panel B presents the results corresponding to Experiment 2.*p < 0.10, **p < 0.05, ***p < 0.01.

 $^{^{14}{\}rm The}$ scale mirrored the four-option Beck Depression Inventory presented to them at the beginning of the thought induction questionnaire.

Table 5, Panel A displays the regression results for experiment 1's optimism rating. The sign of the betas for each treatment is negative, with only the income uncertainty treatment remaining to be statistically significant after the addition of controls. The magnitude of the beta for the income uncertainty treatment is nearly nine times as much as the combined treatment, i.e. the worst-performing treatment across the board. This strange result can be alluded to the possibility that the combined treatment causes an information overload, leading to an incoherent perception of one's own scarcity mindset. In other words, their mindset is exacerbated to the point of impairment of meta-cognition processes, which is supported by the findings in Murayama et al. (2016).

Table 5, Panel B displays regression results for experiment 2's optimism rating. All treatments rate themselves feeling more optimistic than the control, with the consumer anxiety treatment and the combined treatment having statistically significant results. This can be attributed to the fact that the sample that was obtained for this experiment was likely to be more educated relative to that in Experiment 1, which may have helped with the mitigation of the mental taxation associated with uncertainty. Bos et al. (2022) add credibility to this hypothesis through their findings that education and the awareness of self-control problems (such as overborrowing) are positively correlated.

Using demographic data provided by the participants in the SES questionnaire, a risk aversion score is estimated for both experiments by allotting one point each if they answer yes to having a bank account, fixed deposits, insurance (of any kind) and mutual funds. The risk aversion is a simple total of all the points. The correlation coefficient of the risk aversion score and the optimism rating for experiment 1 is 0.0613, and that for experiment 2 is 0.0683. The results weakly indicate that the ones with any kind of financial security are still optimistic in the face of an uncertain financial future, even if their productivity and savings habits change.

6 Discussion and Conclusion

The impoverished face a host of new challenges in today's extraordinary circumstances, which has powerful repercussions on their psychological lives. The findings in this paper suggest that the burden of financial uncertainty has an impact on their higher-order decision making processes, specifically, worker productivity and savings decisions. In particular, the paper provides a nuanced look into their present-day scarcity mindset by conceptualizing the uncertainty as stemming from two sources: income volatility and food and necessities insecurity, both of which are extensively discussed in the larger conversation surrounding the aftermath of the pandemic. Three priming treatments, two for each strain and one for both strains, are formulated to invoke these worries in two randomized lab-in-the-field experiments.

The first experiment demonstrates that it is the double-sided type of uncertainty, and not unidirectional one, that significantly reduces both quality and quantity of productivity, suggesting that an amplification of the causes of uncertainty linearly increases cognitive load. Furthermore, the null result for this treatment for the self-reported rating of optimism for the future, which serves as a check of the individuals' perception of their scarcity, suggests that high cognitive load interferes with the ability to assess one's own thoughts, the existing evidence for which is limited. Even though women constitute a majority of this sample, the results do not limit generalizability, as past literature, notably Cefalà et al. (2020), has demonstrated that women experience just as many intrusive thoughts about the state of the family's finances as men. The evidence generated by the second experiment is mixed; however, given that it was conducted across multiple locations across the city and with participants of more than one ethnicity, it can claim some degree of external validity. These results could also plausibly explain some puzzles found in previous literature. For example, Karlan et al. (2016) find that even after the payment of high-interest loans, the treatment group reverts to debt within a few weeks, and continues to borrow at the same rate as the control group a year or two after the intervention. An understanding that agents optimize based on their future consumption may provide an explanation for this peculiar behavior. The results also have implications for financial inclusion literature, given the insignificant results of all bank variables, and that two distinct groups of financial users with opposing reactions to adverse circumstances are uncovered in the analysis. Further, the counter-intuitive results from the self-reported measures of the scarcity mindset add to the growing awareness that the mental load of poverty can be mitigated by non-circumstantial factors such as education, which is likely to be correlated with things like relatively sound financial health. The direction of causality remains to be established.

In retrospective analysis, it is seen that the samples in both experiments slightly differ in wealth levels, even though they are recruited from similar low-income communities. The individuals in Experiment 2 are younger, more educated, have marginally more investments and insurance, and face less food shortages than those in Experiment 1. This divide may have naturally occurred based on the ability to use an electronic tablet, an inclusion criteria for Experiment 2, given the social distancing requirements of the time. This understanding opens the possibility of conducting two additional studies to answer ensuing questions: If the productivity of educated workers reduces in a comparable manner to those in labor-intensive professions, and if the savings habits of cottage industry workers are affected in a similar manner to those in office jobs.

The evidence generated by both experiments adds validity to the line of thought initiated by Banker et al. (2020) – that the poor live in a near-constant state of awareness of their poverty, especially in visibly high income-inequality cities like Mumbai, and thus any further salience is ineffective for moving the needle on economic decision-making. The present work is silent about the pathways (such as attention channels, self-control limitations, etc) through which the results, significant or otherwise, are obtained¹⁵, and further grassroot-level research may help elucidate the mechanisms.

The evidence is also relevant for policy-making, specifically, for the formulation of safety-net measures such as unemployment insurance and universal basic income for those who live below or on the edge of the poverty line, given that the uncertain prospects of tomorrow's finances insidiously chip away at today's productivity and sound financial decision-making capabilities.

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A Parts of the Questionnaire

A.1 Beck Depression Inventory - 10 selected questions

- 1. Sadness: 0. I do not feel sad. 1. I feel sad much of the time. 2. I am sad all the time. 3. I am so sad or unhappy that I can't stand it.
- 2. **Pessimism:** 0. I am not discouraged about my future. 1. I feel more discouraged about my future than I used to. 2. I do not expect things to work out for me. 3. I feel my future is hopeless and will only get worse.
- 3. **Past Failure:** 0. I do not feel like a failure. 1. I have failed more than I should have. 2. As I look back, I see a lot of failures. 3. I feel I am a total failure as a person.
- Loss of Pleasure: 0. I get as much pleasure as I ever did from the things I enjoy. 1. I don't enjoy things as much as I used to. 2. I get very little pleasure from the things I used to enjoy.
 I can't get any pleasure from the things I used to enjoy.
- 5. Guilty Feelings: 0. I don't feel particularly guilty. 1. I feel guilty over many things I have done or should have done. 2. I feel quite guilty most of the time. 3. I feel guilty all of the time.
- 6. Self-Dislike 0. I feel the same about myself as ever. 1. I have lost confidence in myself. 2. I am disappointed in myself. 3. I dislike myself.
- 7. Crying: 0. I don't cry anymore than I used to. 1. I cry more than I used to. 2. I cry over every little thing. 3. I feel like crying, but I can't.
- 8. Indecisiveness: 0. I make decisions about as well as ever. 1. I find it more difficult to make decisions than usual. 2. I have much greater difficulty in making decisions than I used to. 3. I have trouble making any decisions.
- 9. Worthlessness: 0. I do not feel I am worthless. 1. I don't consider myself as worthwhile and useful as I used to. 2. I feel more worthless as compared to others. 3. I feel utterly worthless.
- 10. Concentration Difficulty: 0. I can concentrate as well as ever. 1. I can't concentrate as well as usual. 2. It's hard to keep my mind on anything for very long. 3. I find I can't concentrate on anything.

A.2 Priming and Control questions

No.	Income Uncertainty	consumer anxiety	combined treatment	Control
1	How many people in your	How many people in your	How many people in your	Do you watch
	family?	family?	family?	Bollywood
				movies?
				Yes/No
2	How many of them are fi-	How many of them are fi-	How many of them are fi-	Pick your
	nancially dependent?	nancially dependent?	nancially dependent?	favourite
				actor:
				Shahrukh
				Khan vs
				Salman
				Khan
3	How many from your	Are you currently em-	How many from your	Pick your
	family went to work to-	ployed? Yes/No	family went to work to-	favourite ac-
	day?		day?	tor: Ajay
				Devgn vs
				Akshay Ku-
				mar
4	How many went to work	If you are not employed,	How many went to work	Pick your
	before lockdown?	how many months ago	before lockdown?	favourite ac-
		did you lose your job? 1-		tor: Aamir
		3, 4-6, 7-9, 9-12, 12+,		Khan vs
		I am currently em-		Salman
		ployed, I was never		Khan
-				D' 1
5	Does anyone in your fam-	If you have a job, are you	Does anyone in your fam-	Pick your
	iny work a temporary or	receiving full salary or	iny work a temporary or	tavourite ac-
	seasonal job! ies/ito	I am unamplayed I	seasonar job! ies/ino	Khan wa
		was nover employed, I		Shahrukh
		was never employed		Khan
6	Are you currently em-	How much do you	Are you currently em-	Pick your
	nloved? Ves/No	spend on groceries	nloved? Ves/No	favourite ac-
	ployed. Tes/140	each week? 200-500		tor Suniel
		501-1000 1001-1500		Shetty vs
		1501-2000, 2000+		Shahrukh
				Khan
7	If you are not employed.	Are you able to spend on	If you are not employed.	Pick your
	how many months ago	groceries as much as vou	how many months ago	favourite ac-
	did you lose your job? 1-	did before the lockdown?	did you lose your job? 1-	tress: Kajol
	3, 4-6, 7-9, 9-12, 12+.	Yes/No	3, 4-6, 7-9, 9-12, 12+,	vs Rani
	I am currently em-	, ·	I am currently em-	Mukherjee
	ployed, I was never		ployed, I was never	
	employed		employed	

8	If you lost your job, did you lose it directly, or did you first get half salary and then were let go? Directly, First half salary then even- tually lost it, I still have a job, I never had a job	How much do youspend on electricityevery month?200-500,501-1000,1001-1500,1501-2000,2001-2500,2501-5000,5000 and more	If you have a job, are you receiving full salary or partial? Full, partial, I am unemployed, I was never employed	Pick your favourite actress: Mad- huri Dixit vs Raveena Tandon
9	If you have a job, are you receiving full salary or partial? Full, partial, I am unemployed, I was never employed	Has the spending on electricity increased in the past three months? Yes/No	If you lose your job in the next three months, or don't find one, how will you provide for your family? I'll use my savings, I'll use my investments, I'll borrow, I'll sell something (gold, silver), other	Pick your favourite actress: Mad- huri Dixit vs Shilpa Shetty
10	If partial, how much is it? More than half, Half, less than half, I'm getting full salary, I am unemployed, I was never employed	How much do you spend on mobile ev- ery month? 200-500, 501-1000, 1001-1500, 1501-2000, 2000 and more 1000 and	If the current conditions continue for longer, do you think you will be able to afford spending on groceries, electricity and mobile? Yes/No	Pick your favourite movie: Hum Aapke Hai Kaun vs An- daaz Apna Apna
11	Is there anyone else in the household who is working? Yes/No	Has the spending on mo- bile increased in the past three months? Yes/No	In lockdown, how much of your savings did you end up using? 0-25%, 26-50%, 51-75%, 76-85%, 85-95%, 95-100%	Pick your favourite movie: Kabhi Khushi Kabhi Gham vs Kal Ho Na Ho
12	If yes, are they receiv- ing full salary or par- tial? Full, partial, they are unemployed, they were never em- ployed	If the current conditions continue for longer, do you think you will be able to afford spending on groceries, electricity and mobile? Yes/No	How much savings isleft now?200-500,501-1000,1001-1500,1501-2000,2001-2500,2501-5000,5001-8000,8001-10,000,10,001 andmore	Pickyourfavouritemovie:KabhiKhushiKabhiGhamvsKuchKuchHai

13	If partial, how much is it? More than half, Half, less than half, they are getting full salary, they are un- employed, they were never employed	In the past six months, what expenditure has unexpectedly in- creased? Spending on children's edu- cation, spending on medicines and doctor visits, spending on travel, other, nothing has increased	Do you think that amount is enough if the lockdown continues for longer? Yes/No	Do you listen to Hindi songs? Yes/No
14	Beforelockdown,whatwasthemonthlyhouse-holdincome?5000andless,5001-7500,7501-10,000,10,001-12,500,12,501-15,000,15,001-20,000,20,001-25,000,25,001andmore	How much were you able to save every month before lockdown?200-500, 501-1000, 1001-1500, 1501- 2000, 2001-2500, 2501-5000, 5001- 8000, 8001-10,000, 10,001 and more	Do you have another skill to find a different kind of job? Yes/No	Pick your favourite singer: Alka Yagnik vs Sadhana Sargam
15	What is the monthly household income to- day? 5000 and less, 5001-7500, 7501- 10,000, 10,001- 12,500, 12,501- 15,000, 15,001- 20,000, 20,001- 25,000, 25,001 and more	In lockdown, how much of your savings did you end up using? 0-25%, 26-50%, 51-75%, 76-85%, 85-95%, 95-100%	What other job will you find? Construction job, Security guard, Delivery, Farm work, Daily labor, Clerk work, other	Pick your favourite singer: Sunidhi Chauhan vs Shreya Ghoshal
16	Do you think your job is secure or you will find a job in the next three months? Yes/No	How much savings is left now?200-500,501-1000, 1001-1500, 1501-2000, 2001- 2500, 2501-5000, 5001-8000, 8001- 10,000, 10,001 and more	Do you think you'll get another job? Yes/No	Pick your favourite singer: Udit Narayan vs Kumar Sanu
17	Do you think if you re- tain your job, or find a job in the next three months, the salary will be lesser than before? Yes/No	Do you think that amount is enough if the lockdown continues for longer? Yes/No	What do you think the other job's salary will be? More than what I make now, as much as what I make now, less than what I make now	Pickyourfavouritesinger:LataMangeshkarvsAshaBhonsale

18	Do you think that the job of a family member is secure, or they will find a job in the next three months? Yes/No	Do you think you will be able to spend for Diwali this year? Yes/No	Do you think the salary will be enough to main- tain a certain standard of living? Yes/No	Pickyourfavouritesinger:KishoreKumarvsMohammadRafiPickyour
10	tain your job, or find a job in the next three months, the salary will be lesser than before? Yes/No	what do you think you will spend on? Food, Clothes for children, Clothes for everyone, Buying gold or silver	able to spend for Diwali this year? Yes/No	favourite singer: Kishore Kumar vs Suresh Wad- kar
20	If you lose your job in the next three months, or don't find one, how will you provide for your family? I'll use my savings, I'll use my investments, I'll borrow, I'll sell something (gold, silver), other	How much do you think you can afford to spend? 200-500, 501-1000, 1001-1500, 1501- 2000, 2001-2500, 2501-5000, 5001- 8000, 8001-10,000, 10,001 and more	How much do you think you can afford to spend? 200-500, 501-1000, 1001-1500, 1501- 2000, 2001-2500, 2501-5000, 5001- 8000, 8001-10,000, 10,001 and more	Do you like 1990s music or 2000s music?
21	Do you have another skill to find a different kind of job? Yes/No	Is there enough food for two meals for everyone today? Yes/No	If you urgently need ₹1000, eg. for a doctor visit, where would you be able to get it? I have it, From someone in my house, From relatives/neighbours, From a moneylender, I won't be able to get it	Do you like dance songs or slow songs?
22	What other job will you find? Construction job, Security guard, Delivery, Farm work, Daily labor, Clerk work, other	If you urgently need ₹1000, eg. for a doctor visit, where would you be able to get it? I have it, From someone in my house, From relatives/neighbours, From a moneylender, I won't be able to get it	If you urgently need ₹10,000, eg. for a hospitalization, where would you be able to get it? I have it, From someone in my house, From rel- atives/neighbours, From a moneylender, I won't be able to get it	Do you watch tv serials? Yes/No

23	Do you think you'll get another job? Yes/No	If you urgently need ₹10,000, eg. for a hospitalization, where would you be able to get it? I have it, From someone in my house, From rel- atives/neighbours, From a moneylender, I won't be able to get it	If you urgently need ₹50,000, eg. for spend- ing many days in the hospitalization, where would you be able to get it? I have it, From someone in my house, From rel- atives/neighbours, From a moneylender, I won't be able to get it	Do you watch Hindi serials or Marathi serials?
24	What do you think will be the other job's salary? More than what I make now, as much as what I make now, less than what I make now	If you urgently need ₹50,000, eg. for spend- ing many days in the hospitalization, where would you be able to get it? I have it, From someone in my house, From rel- atives/neighbours, From a moneylender, I won't be able to get it	If you urgently need $\mathbf{\xi}_{1,00,000}$, eg. for a small emergency surgery, where would you be able to get it? I have it, From someone in my house, From relatives/neighbours, From a moneylender, I won't be able to get it	On a scale of 0 - 3, how much do you like the serials you watch? 0, 1, 2, 3
25	Do you think the salary will be enough to main- tain a certain standard of living? Yes/No	If you urgently need ₹1,00,000, eg. for a small emergency surgery, where would you be able to get it? I have it, From someone in my house, From relatives/neighbours, From a moneylender, I won't be able to get it	If you urgently need $₹5,00,000$, eg. for a big emergency surgery, where would you be able to get it? I have it, From someone in my house, From relatives/neighbours, From a moneylender, I won't be able to get it	On a scale of 0 - 3, how opti- mistic are you about the fu- ture? 0, 1, 2, 3
26	Do you think to main- tain the standard of liv- ing, you'll have to take up two jobs? Yes/No	If you urgently need ₹5,00,000, eg. for a big emergency surgery, where would you be able to get it? I have it, From someone in my house, From relatives/neighbours, From a moneylender, I won't be able to get it	On a scale of 0 to 3, how optimistic are you about the future? 0 , 1 , 2 , 3	

27	Do you think you're physically capable of doing two jobs? Yes/No	On a scale of 0 to 3, how optimistic are you about the future? 0 , 1 , 2 , 3	
28	Do you worry that if you contract covid, your long-term ability to work will be hampered? Yes/No		
29	On a scale of 0 to 3, how optimistic are you about the future? 0 , 1 , 2 , 3		

A.3 SES questions

- 1. Rate how hungry you were during the experiment: 1 5
- 2. Rate how tired you were during the experiment: ${\bf 1}$ ${\bf 5}$
- 3. What is your age?
- 4. What is your gender?
- 5. Are you married? Y/N
- 6. What is your religion? (i) Hinduism (ii) Buddhism (iii) Sikhism
- 7. What language do you speak at home? (i) Marathi (ii) Hindi (iii) Telugu (iv) Kannada (v) Gujarati (vi) Tamil
- 8. What is your education level? (i) Primary (Std 1-5) (ii) Secondary (Std 8-12) (ii) Some college (ii) College graduate and above
- 9. Do you have your own house? Y/N
- 10. Do you have a bank account? \mathbf{Y}/\mathbf{N}
- 11. Do you have fixed deposits? \mathbf{Y}/\mathbf{N}
- 12. Do you have mutual funds? Y/N
- 13. Do you have insurance? Y/N, What kind?
- 14. Were you infected with the novel coronavirus? Y/N
- 15. Has there ever been a point in the last six months when you didn't have enough food to eat? \mathbf{Y}/\mathbf{N}
- 16. How many times did this happen?

B Steps of the productivity task



STEP 0: OPENING POSITION



STEP 2: PUT THE RED ONE ON TOP OF THE BLUE ONE



STEP 1: TURN THE BLUE THREAD RIGHTWARD



STEP 3(A): INSERT THE RED ONE FROM UNDER THE BLUE AND WHITE ONES



STEP 3(B) : PULL THE RED AND BLUE THREADS



STEP 4: TURN THE BLUE ONE, JUST LIKE BEFORE



STEP 5: PUT THE RED ONE ON TOP OF THE BLUE ONE



STEP 6(A): INSERT THE RED ONE FROM UNDER THE BLUE AND WHITE ONES



STEP 6 (B) : PULL.

C Grading Criteria for the bracelet

No.	Criteria	Point if Yes	Point if No
1	Is the bracelet completed?	1	0
2	Is the bracelet 20 cm?	1	0
3	Are there knots > 1 cm in width?	0	1
4	Are there knots > 1 cm in length?	0	1
5	Are there knots that have criss-crossed?	0	1
6	Is the last knot tight	1	0

Table 7: This table presents the grading criteria for each bracelet in the productivity task experiment. Items 1, 2 and 6 are regularly scored, whereas items 3, 4, and 5 are reverse-scored. In total, a single bracelet can score up to 6 points.

D Demographic balance checks

(on the next page)

		education	L		gender			occupation			not en	loug	n food?	age		dep ii	ndex
		top	freq	%	top	freq	%	top	freq	%	top	freq	%	mean	std	mean	std
trt																	
0	63	Std 8 - 12	31	49.20	female	55	87.30	own business	28	44.44	no	38	60.31	29.84	11.99	0.77	0.53
1	63	Std 8 - 12	32	50.79	female	56	88.88	own business	22	34.92	no	43	68.25	32.57	9.30	0.97	0.58
2	62	Std 8 - 12	36	58.06	female	58	93.54	ownbusiness	30	48.38	no	44	70.96	35.45	11.35	0.88	0.55
n	66	Std 8 - 12	33	50	female	60	90.90	own business	27	40.90	no	44	66.66	27.56	8.59	0.84	0.52
	254																
p-value		0.0513			0.673			0.008			0.6313			0.000		0.233	

Table 8: Experiment 1 - balance checks

		age		gender		language			education			depres	sion index
	count	mean	std	freq	%	top	freq	%	top	freq	%	mean	std
trt type													
	86	27.53	8.96	54	62.79	Hindi	36	41.86	College graduate	53	61.62	0.83	0.48
2	65	25.47	8.26	35	53.84	Hindi	32	49.23	College graduate	34	52.30	0.87	0.57
3	67	25.92	7.49	40	59.70	Hindi	32	47.76	College graduate	35	52.23	0.78	0.48
4	55	25.07	9.71	28	50.90	Marathi	28	50.90	College graduate	32	58.18	0.82	0.62
p-value		0.3847		0.9982		0.5363			0.3633			0.8213	

Table 9: Experiment 2 - balance checks

E Productivity task robustness checks

		Panel	A: OLS re	gressions				
	Binary	rating	Average nu	mber of errors	No of	knots	No of b	racelets
Income Uncertainty	-2.3986**	-1.1325	3.8766	3.4057	-3.2425	1.4452	0.0077	0.2270
	(1.1809)	(1.1307)	(3.0294)	(2.2227)	(3.4736)	(3.5532)	(0.1813)	(0.1630)
Consumer Anxiety	-1.4439	-0.3469	-0.1310	-0.4001	-4.8156	0.0036	-0.2020	0.0488
	(0.9497)	(0.9628)	(0.6294)	(1.0235)	(3.0018)	(2.9302)	(0.1715)	(0.1669)
Combined Treatment	-2.7988***	-2.5096***	3.5021***	3.0486***	-8.7189***	-7.0246**	-0.3471**	-0.2822**
	(0.7741)	(0.8837)	(1.1141)	(1.0012)	(2.6241)	(2.7415)	(0.1522)	(0.1407)
Control Mean	11.4923	9.1305	3.1659	6.4051	45.4769	32.1815	2.4923***	2.1380
R-squared	0.0487	0.1137	0.0695	0.1812	0.0400	0.1331	0.0370	0.1443

Panel A: OLS regressions

Panel B:	Poisson	regressions
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	Binary	rating	Average nur	mber of errors	No of	knots	No of b	racelets
Income Uncertainty	-0.2340*	-0.1057***	0.8164***	0.7324***	-0.0739	0.0400***	0.0030***	0.0971
	(0.1208)	(0.1095)	(0.4479)	(0.3164)	(0.0796)	(0.0789)	(0.0722)	(0.0636)
Consumer Anxiety	-0.1342	-0.0275***	-0.0570***	-0.1384***	-0.1119	0.0022***	-0.0845***	0.0201
	(0.0881)	(0.0856)	(0.2044)	(0.2623)	(0.0695)	(0.0651)	(0.0705)	(0.0665)
Combined Treatment	-0.2790***	-0.2505***	0.7672***	0.6829***	-0.2128***	-0.1723***	-0.1499***	-0.1236^{***}
	(0.0725)	(0.0834)	(0.2046)	(0.1940)	(0.0623)	(0.0649)	(0.0625)	(0.0561)
Control Mean	2.4416	2.1437	1.1338	1.5256	3.8172	3.4344	0.9132	0.7494

Table 10: This table presents average treatment effects on Experiment 1 variables using OLS and Poisson. Specifications both without and with controls for demographics (age, education, occupation, language) and depression index are presented. Standard errors clustered at the session level. *p < 0.10, **p < 0.05, ***p < 0.01.

F Screenshots of the savings decisions game

F.1 Round 1 - right after the prime



Figure 3: Translation of the left hand panel text: You have received 10000, how much will you spend and how much will you save? [text in yellow box]: expenditure + home savings + bank savings = 10000 rupees. The text above the first box says "expenditure", the text above the second box says "savings at home", and the text above the third box says "savings in bank". **Translation of the right hand panel text, above the calculator:** If you have face any difficulties in calculation, you can use the calculator below.

F.2 Round 4 - loan screen variables

आपातकाल (emergency) के लिए आपको 54000रुपये खर्च करने होंगे।

आपने अपने खर्चों को कवर करने के लिए कौन सा विकल्प चुना है?

- [°] 1.5 % प्रति मासिक (monthly), 10 महीने में पैसा लौटाओ
- [°] 8 % प्रति सालाना (yearly), 12 महीने में पैसा लौटाओ

आप अपने घर की बचत और बैंक बचत से राशि निकाल सकते हैं और बाकी की राशि आपको उधार के रूप में लेनी होगी।

यदि आपको गणना में (calculation) कठिनाई हो रही है, तो नीचे दिए गए कैलकुलेटर का उपयोग करें



Figure 4: UPPER PART OF THE SCREEN.

Translation of the left hand panel text: There has been an emergency, and you will need to spend 54000 rupees. To fund this expense, you what loan scheme will you take? (1) 1.5% per month, for 10 months (2) 8% per year, for 12 months. You can also take out some money from your home and bank savings, and fund the rest using a loan. The **right hand panel text** above the calculator contains the same instructions as before.

घर से निकाली गई राशि + बैंक से निकाली गई राशि + उधार राशि = 54,000 रुपये होनी चाहिए।

आप अपने घर की बचत में से कितना पैसा निकालेंगे?(घर में बचत रु 16000):

बैंक की बचत से आप कितना पैसा निकालेंगे? (बैंक में बचत रु 12000):

कितना उधार लेंगे?

Figure 5: LOWER PART OF THE SCREEN.

Translation of the text: [Text in the yellow box:] amount taken from home + amount taken from bank + loan amount = 54000. Text above the first input box: How much will you take out of your home savings (your home savings are 16000 rupees). Text above the second input box: How much will you take out of your bank savings (your bank savings are 12000 rupees.) Text above the third input box: How much loan will you take?

आपके द्वारा चुने गए विकल्प के बाद, आपका कुल उधार और ईएमआई(हर महीने भुगतान की जाने वाली राशि) निम्नानुसार है-



Figure 6: SCREEN AFTER MAKING DEBT CHOICE

Translation of the text: Line 1: After your choice of debt, your total loan and EMI (monthly installment) is: (box 1 in line 2 displays the total loan; box 2 displays the monthly installment). Line 3: After spending on the loan, your savings are: (box 1 displays total home savings, box 2 displays total bank savings).

F.3 Round 5 - right after debt choice



Figure 7: UPPER PART OF THE SCREEN.

Translation of the left hand panel text: You have received 10000 rupees, how much will you spend and how much will you save? [Text in the yellow box: (1) EMI is a fixed expenditure, you must pay it. (2) After your EMI (Rs 4370), your remaining endowment is 10000-4370 = 5630 rupees. (3) This means that your spending + home savings + bank savings = 5630. The right hand panel text above the calculator is the same as before.



Figure 8: LOWER PART OF THE SCREEN

Translation of the text: Text above the first box: Type in the EMI amount here. Text above the second box: Spending. Text above the third box: Savings at home. Text above the fourth box: Savings in bank.



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